

SPECIFICATION

TITLE OF INVENTION

Title: Multi-Section Drum-Closing Ring

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The applicant is a citizen of the United States of America.

CROSS-REFERENCE TO RELATED APPLICATIONS

Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISK APPENDIX

Not Applicable

BACKGROUND OF THE INVENTION

This invention relates to closing ring assemblies for securing lids and covers on the open heads of cylindrical drums that are generally used for storage and transporting materials. It deals particularly with improvements to the standard annular split closing rings used for securing drum lids to open head drums.

Open head drums are commonly used by industry as storage and transportation containers. Typically, these drums have a rolled upper rim at the top opening and the lids have a mating peripheral lip that fit over the drum's upper rim. A sealing gasket is generally installed between the drum's upper rim and the lid's peripheral lip. To close a drum, the gasket and lid are

installed on the drum and an annular split closing ring is installed over the lid's peripheral lip. The ring is then compressed to bring the opposing ends of the ring in near abutting relation to secure the lid in place and compress the gasket. This creates a seal between the drum and the lid and secures the contents of the drum. The closing ring is a split ring, generally metal, which is secured on the drumhead by one of various means for compressing the opposing ends of the ring toward each other. Typically, a pair of lugs are welded to the ring, one on each side of the annular split. The welded lugs are drawn together by means of tightening a bolt and nut. However, there are other methods of fastening, securing, and locking the annular split ring, such as U.S. Patent Numbers 4134609, 4200316, 4413850, 4957317, and 5215206.

One of the major problems encountered with the closing ring assembly described above is that all too frequently people installing and removing the current standard closing ring assembly get their fingers caught and pinched. The pinch points are created while prying the ring open and fitting it onto the drum lid's peripheral lip or prying the ring open for removal. Fingers get caught between the ring and lid due to the spring pressure from the closing ring.

My invention addresses a means for safer installation and removal of drum-closing rings and will help prevent the pinch points that exist with the current standard drum-closing ring assembly.

BRIEF SUMMARY OF THE INVENTION

This invention is directed to the improvement of the annular split drum-closing ring. The object is to make a drum-closing system that is much safer to install and remove. This is accomplished by making the closing ring an annular two-section ring. An annular two-section ring will eliminate the spring pressure of current one-section closing rings and thus prevent pinch points that exist when installing and removing the one-section rings.

Rings of more than two annular sections can also be used to accomplish the same goal as the two-section drum-closing ring. But, rings of more than two sections could be more difficult to install and cause a greater problem in sealing the drum.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

This multi-section drum-closing ring invention is an improvement of the conventional one-section annular split drum-closing ring. The figures listed below illustrate the basic and primary differences from the conventional drum-closing ring. These differences are basically an annular two-section ring versus the one-section ring and the use of a hinge or other standard fastening method on the additional annular ring separation.

FIG. 1 is the plan view of an annular two-section drum-closing ring utilizing a conventional drum-closing ring fastening method, nut-and-bolt style, on each annular separation side.

FIG. 2 is the plan view of an annular two-section drum-closing ring utilizing a hinge on one closing ring annular separation and a conventional drum ring fastening method, nut-and-bolt style, on the opposite annular separation.

DETAILED DESCRIPTION OF THE INVENTION

This invention is a safety improvement of the conventional one-section annular split drum-closing ring. Drum-closing rings secure a removable lid to an open head drum and are generally C-shaped in cross-section and are concave toward the peripheral edges of the drum. In normal operations, drum-closing rings are manually installed and removed.

This invention claims a drum-closing ring of two or more sections about the annulus of the drum. A two-section closing ring will eliminate the spring pressure of current one-section closing rings and thus prevent pinch points that exist when installing and removing the one-section rings. This multi-section drum-closing ring makes the day-to-day function of installing and removing drum lids a much safer and easier operation.

These multi-section drum-closing rings are manufactured in the same manner as the existing one-section drum-closing rings with the difference of having one or more additional annular separations in the ring that covers the peripheral edges of the chime of the drum. With the additional annular separations or splits in the ring, it is necessary to have a connection between each ring section. The ring sections can be connected by any number of conventional drum closing-ring fastening and locking methods. Most of these drum ring fastening and locking

methods are currently patented. The most common drum ring fastening method is the nut-and-bolt style. These multi-section drum-closing rings can be fabricated using metal or any other suitable material.

One method of fabrication for the two-section ring is to install a hinge on one closing ring annular separation and install a conventional drum ring fastening method on the opposite annular separation. This would enable the operator to open and close the ring without having to fight the spring pressure that is present in the one-section drum closing rings. This fabrication is illustrated in FIG. 2. The hinge can be riveted or welded to the ring sections. The annular ring separations are shown in FIG. 2 at 180 degrees apart. This is most efficient, but not altogether necessary.

The two-section ring can also be fabricated with a conventional drum-closing ring fastening method on each annular separation side. This type of fabrication is shown in FIG. 1 using the nut-and-bolt style fastening method on each side. An advantage of this configuration is a more compact packaging ability for shipping large quantities of drum-closing rings, as the rings will separate into two complete halves. Again, the annular ring separations are shown in FIG. 1 at 180 degrees apart, as this is most efficient, but not altogether necessary.

Rings of more than two sections can be used to close the chime of a drum, but rings of more than two sections could be more difficult to install and cause a greater problem in sealing the drum. Generally, the problem area for sealing drums is the area where the ring is split; therefore, the fewer amount of annular ring separations, the better the seal of the lid to the drum.

This multi-section drum-closing ring may be a little more difficult to get a complete airtight seal for the contents of a drum, barrel, or container. However, not all applications of drum closure require a complete airtight seal. Many applications in day-to-day operations store solids in drums; therefore, the multi-section drum-closing ring presents a much safer and easier method for installing and removing lids on open head drums.

This invention has been described in detail. Modifications and alternations may be made without departing from the concept and scope of this invention and this specification. It is the

intent of this specification to include all such modifications and alterations as they come within the concept and scope of the appended claims.